# On a Collection of Land and Freshwater Gastropoda from Madagascar, with Descriptions of new Genera and new Species.

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(Plate 35, and 6 Text-figures.)

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The collection described here was formed by the Hon. P. A. Methuen and M. Perrier de la Bathie in Madagascar, and was sent by the first named to Prof. G. C. Bourne, F.R.S., by whom they were handed over to the British Museum for examination. The bulk of the material was collected by Messrs. Methuen and de la Bathie personally during their residence in the island, while a part was obtained from a field-collector, M. Herschell Chauvin Messrs. Methuen and de la Bathie have kindly presented the types of new forms here described and the major part of the rest of the collection to the British Museum.

The specimens collected are mainly of conchological interest, and the new genera and new species have been established upon conchological characters; but it is believed that they are sufficiently clearly marked in each case to warrant such a superficial diagnosis. Examples of some of the animals of which the shells have been described here are available, and it is hoped that it will be possible to publish an account of the anatomy. (See Appendix.) Absence of this sort of information must necessarily prevent any positive assertions being made upon the relationships of the molluscan fauna of Madagascar in the light of this collection, conchological resemblances being very inadequate evidence for basing such generalizations upon. Certain of the conclusions, provisional in so far as they depend upon conchological evidence alone, may be however alluded to here.

It has long been known that the land and freshwater Mollusca of Madagascar exhibit closer affinities with those of the Oriental region than with those of continental Africa. The resemblance may not be very marked. The molluscan fauna of this island is peculiar and individual. But where its affinities are obvious they appear to be as indicated above. Moreover, the converse is true—some very distinctive groups of African mollusca are either absent or only sparsely represented in Madagascar (Cooke, 'The Conchologist,' vol. ii.). Specimens obtained by Messrs. Methuen and de la Bathie lend support to this view, though only, as has been admitted above, of a provisional nature. It may be worth while to point out the interesting forms.

The new genus, for which the name *Bathia* has been proposed, is undoubtedly the most interesting feature of the collection. In the absence of

anatomical knowledge we have to point out that the characters of the shell approximate it to the very characteristic genus *Taphrospira*, which is confined to India, Burma, and the Andaman Islands. If the conchological evidence is supported by the anatomical (the animal itself was unfortunately not found), the relationship thus established will be even more satisfactory than the occurrence in Madagascar of the characteristic *Kaliella barrakporensis* and *K. sigurensis* of India, for in the latter instances it is impossible to assert with any certainty that the two species in question were not introduced by human agency. Again, the genus *Kalidos* recently proposed by Gude (Proc. Malac. Soc. vol. ix. p. 269), and now reinforced by another species here described, appears to constitute a further link with the East. The affinities of this genus are doubtful. They may be with the *Xesta*-forms, which have a wide distribution in the Malay Archipelago and farther east as far as the Solomon and Admiralty Islands. But Col. Godwin-Austen informs the author that he suspects its affinities possibly are with the South Indian *Ariophanta*.

Finally, we may direct attention to a fact that does not appear to have been commented on before. It would appear that it is with the South Indian, Singhalese, and possibly Malaysian forms, rather than with the North Indian fauna, that the Malagasy fauna has to be compared.

The following is an analysis of the eighteen genera comprised in the collection of Messrs. Methuen and de la Bathie:—

A. Peculiar to Madagascar.
*Melanatria.*
*Helicophanta* (with nearest allied genera in the Oriental Region).
*Ampelita.*
*Clavator.*
*Kalidos* (with nearest allied genera in the Oriental Region).
*Bathia* (allied to the Oriental *Taphrospira*).

B. Common to Madagascar and the Oriental Region.
*Hemiplecta* (*v.* Appendix).
*Rhysota.*

C. Common to Madagascar and the Oriental Region and found sparsely in Africa.
*Paludomus.*

D. Common to Madagascar and Africa.
*Cleopatra.*
*Urocyclus.*
(*Tropidophora*).

The rest of the enumerated genera are cosmopolitan.

In the appended details the twenty-five (out of thirty-two) peculiar species are indicated by an asterisk.

Note.—Since writing this introduction the author has received an interesting communication from Colonel H. H. Godwin-Austen, F.R.S., with reference to the community of species between Madagascar, Mauritius, and India. He draws attention to the fact that an Assamese species of *Macrochlamys* has been introduced into Mauritius with *dhan*, or unhusked rice, exported from Assam, and goes on to say : "I feel quite convinced that India, Madagascar, and the E. coasts of Africa have been in connection with each other by native craft going back 4000 years or more. The Banana has played its part in the transmission of species." Such observations show that caution is necessary in dealing with cases of community of species between the East and West coasts of the Indian Ocean. For a more extended survey of this question, *cf.* Godwin-Austen, Proc. Malac. Soc. 1908, p. 146. The author has to thank Col. Godwin-Austen for valuable assistance and advice in the determination of some of the forms here enumerated.

## List of Species.

### STREPTONEURA.

1. Neritina gagates, *Lamk.*

Lamarck, An. s. Vert., 1822, p. 185.

Between Tamatave and Marodasatia (Antongil Bay), E. Madagascar.

Representative examples.

So far as can be discovered, this is the first notice of the species from Madagascar, though it has been previously recorded from Mauritius and the adjacent islands.

2. Neritina [Clypeolum] pulligera, *Linn.*, var. Knorri, *Récluz.*

Linné, Syst. Nat. ed. xii. p. 1253.

*Locality.* Vide no. 1.

A small discoloured example.

This variety, according to examples in the British Museum, extends as far east as the Goram Is. (New Guinea), and is also found in Continental Africa. The species is also found in Australia and C. Polynesia (*Pilsbry*).

3. ? Cleopatra trabonjiensis, *E. A. Smith.*

E. A. Smith, P. Z. S. 1882.

Lake Alaotra, N. end.

*Cleopatra multilirata* and *Cl. Smithii*, Ancey (Nautilus, xx. 1906, p. 45) are strikingly like this species, and do not appear to differ specifically.

These two forms are from Vinaninony (Madagascar) and the R. Chozi (B. Central Africa).

4. *Paludomus Grandidieri, *Crosse & Fischer*.

Crosse & Fischer, Journ. de Conch. 1872, p. 209.

*Locality*? (Küster, Conch.-Cab. F. p. 45, gives "streams of E. Madagascar (*Grandidier*)").

5. *Paludomus madagascariensis, *Brot*.

Brot, in Küster's Conch.-Cab. 1880, vol. F.

*Locality*. Cf. no. 4 (Brot only gives "Madagascar").

This species is represented by a single example slightly differing from the typical form in that the shoulders of the apical whorls are ornamented with a rim.

It would appear that these two species are the only representatives of the genus, which is otherwise restricted to India, and largely to Ceylon. The allied genera *Tanalia*, *Stomatodon*, and *Philopotamis* are essentially Singhalese.

6. *Melanatria fluminea (*Gmelin*).

Gmelin, Syst. 3503, *Buccinum fluvineum*.

Torrents between Matilasu and Mangoro (E.), and at source of R. Ihovika (1000 m. alt.).

Lake Alaotra?

Representative examples.

7. *Melanatria Johnstoni, *E. A. Smith*.

Smith, P. Z. S. 1882.

Mahavavy, Bélolóndy (100 m. alt.), and Mahavavy-Tandrahu.

Representative examples.

8. ? Melania psorica, *Morelet*.

Morelet, Journ. de Conch. 1864, p. 287.

*Locality*?

Represented by a few weathered and incomplete specimens.

Though agreeing in most respects with the figure and description of *psorica*, these examples, however, exhibit an aperture very effuse towards the base. If more material of good condition were forthcoming, it might lead one to consider this a new species, though in any case it is very near *psorica*.

In general this species appears to be allied to the *rudis* group (Ceylon-Amboina).

9. Melania amarula (*Brug.*).

Bruguière, Encycl. Méthod. t. 458, *Bulimus amarula.*

*Locality.* Cf. no. 1.

Ten examples, all juvenile. The spines in all appear to be rather short when compared with examples of the same age from Mauritius.

According to von Martens, Moll. Maur. 1880, p. 211, the "*Voluta fluviatilis*" of Rumphius from Amboina, compared by Rumphius to Linné's *Helix amarula*, is the same as this species. This gives an eastern extension of the species, which is otherwise known from the Comoros, Bourbon, and Mauritius, and the present locality.

10. Melania tuberculata, *Müller.*

Müller, Verm. no. 378, *Melania tuberculata.*

*Locality.* Cf. no. 1.

Rather smooth examples with little tuberculation and marked spiral sculpture, the body-whorl rather ventricose.

11. *Tropidophora bicarinata, *Sowerby.*

Sowerby, Thesaurus, vol. i., Cyclostoma, p. 120.

Forest of Folohy.

In woods 300 to 600 m. alt. between Matilavu and Mangoro.

*Vide* under 12.

12. *Tropidophora betsiloensis, *E. A. Smith.*

Smith, P. Z. S. 1882.

In woods 300 to 600 m. alt., between Matilavu and Mangoro, and near Lake Alaotra.

This species is very near the preceding, and it is possible that further investigation upon a good supply of material would furnish intervening links. As it is, the two species appear to be divisible upon the nature of the umbilicus alone, which is uncovered in *betsiloensis.*

13. *Tropidophora congenera, *E. A. Smith.*

Smith, l. c.

Woods, on limestone soil, Ambongo.

A single weathered example.

This species is, as Smith admits, very closely related to another Malagasy form, *C. consanguineum*, Sowerby.

14. ? *Tropidophora sp. ?

One example from woods on limestone soil, Nomoroko, Ambongo.

This example is very weathered, and precise determination is thus precluded. It appears to be near *T. ligatum*, Müller, though, as far as can be made out, sufficiently distinct.

15. *Tropidophora balteatum, *Sowerby*.

Sowerby, P. Z. S. 1873, p. 452.

One example from woods on limestone soil, Ambongo.

16. *Ampullaria madagascariensis, *E. A. Smith*.

Lake Alaotra.
Ambongo.
Ponds and streams in W. Madagascar.

## EUTHYNEURA.

### PULMONATA.

#### Suborder **Basommatophora**.

#### Fam. Limnæidæ.

17. *Limnæa hovarum, *Tristram*.

Tristram, P. Z. S. 1863, p. 61.

Lake Alaotra.

The examples of this species are all very much eroded, and it is not possible to be quite sure if the sculpture alluded to by Smith (P. Z. S. 1882, p. 385) is present, though traces appear to remain.

*L. specularis*, Morelet MS. (B.M.) is a synonym.

#### Suborder **Stylommatophora**.

#### Fam. Limacidæ.

18. *Urocyclus pinguis, n. sp. (Plate **35**. figs. 6, 7.)

*Locality*. Vide no. 1 (*v.* Appendix).

This species and the *Veronicella* described below have had names proposed for them in spite of the fact that preservation in alcohol has had the result of discolouring them. Reliance has been placed in the other superficial characters for determining them, with the result that it has been impossible to find any described species with which it is possible to identify them.

Body swollen and stout, moderately carinate, the posterior part of the body traversed by longitudinal grooves which occasionally are bifurcated, and the interspaces between which are marked by smaller grooves set at right angles to them.

Shield rather large, rounded posteriorly, wrinkled and granular, with a small dorsal pore. Tail truncate.

Foot deeply sulcate transversely and its edge thrown into folds † in the posterior region. Anteriorly smooth and non-plicate. The median third about equals the lateral areas in width.

Colour (in alcohol) : very pale dirty yellow, with two lateral bands of faint purplish-brown on the shield.

Length 25·5 mm., breadth 9 mm. Breadth of foot 4·5 mm.

Holotype in the Zoological Department, British Museum.

## Fam. Zonitidæ.

19. *Rhysota æquivoca, n. sp. (Plate 35. figs. 16–18.)

Woods, liassic limestone, Ambongo.

The above generic position has been assigned upon the conchological characters specified as generic by Pilsbry (Man. Conch. 2nd series, ii. p. 6), though it is highly probable that more complete anatomical knowledge of the group will lead to a redistribution of the forms assigned to this and the related genera.

Shell very depressed ; spire scarcely salient at all, perforate, shouldered at the beginning of the last whorl ; whorls $5\frac{1}{2}$, gradually increasing in size, the last increasing rapidly. The sculpture is the same above and below, and consists of closely-set and slightly undulating lines of growth finely decussated to give a close granular texture to the surface. Suture impressed. Aperture irregularly lunate, the inferior edge sloping gently down to an expansion occupying the extreme inferior angle ; external superior angle rounded off ; columellar lip slightly expanded over the umbilicus. Peristome a little thickened. Colour very pale dirty yellow, becoming brighter at the peristome and paler in the columellar region.

Dimensions (max.) 35·5 mm. diam. × 16 mm. alt.

Holotype from Ambongo, in the Zoological Department, British Museum.

20. *Kalidos Bournei, n. sp. (Plate 35. figs. 8–10.)

Woods, on limestone soil, "Turingy de Namoroko, Ambongo" (*P. de la B.*).

This is clearly to be included in the genus proposed by Gude (Proc. Malac. Soc. 1911, p. 273) for *Helix ekongoensis*, Angas. At first sight it appears to resemble that species ; but while *ekongoensis* is obviously juvenile, and this species is adult, the latter is smaller, while, in addition, it lacks the exquisite sculpture of Angas's species, is flatter in the spire, and exhibits other differences.

† It is just possible, but not at all likely, that this plication is due to contraction in spirit.

Shell minutely perforated, depressed, thin ; 5¼ whorls ; suture impressed ; the part of the body-whorl above the periphery about the same size as that below ; surface smooth, scarcely marked by the lines of growth. The periphery rounded. Colour yellowish, becoming lighter underneath ; the body-whorl traversed by two spiral chestnut bands, one on the periphery, the other above it; the latter is continued on to the upper whorls. Aperture flattened, lunate, gently curved without any angulation. Columella very slightly reflected over the umbilicus.

Dimensions : 19 mm. (max. diam.) × 11·25 mm. (max. alt.).

Holotype in the Zoological Department, British Museum.

21. *Hemiplecta oleata, *Ancey* (*v.* Appendix).

*Hemiplecta oleata*, Ancey, Nautilus, 16, p. 65.

Forest of Folohy.

The examples representing this species agree very closely with the type-description, except that the upper surface can scarcely be regarded as entirely "irregulariter granulata," the granulations being in most parts regular and formed by the decussation of spiral striæ on the lines of growth.

22. *Hemiplecta bathensis, n. sp. (Plate 35. figs. 1–3.)

Woods, liassic limestone, Ambongo.

The author experiences considerable diffidence in placing this in the above genus. It resembles *javanica*, Lamk., ranked by Pilsbry (Man. Conch. ser. II. 2, p. 80) along with certain other Indian and Malaysian forms as "connecting [*Xesta*] with *Xestina*," and by Gude (Journ. Malacology, x. 1903, p. 54) as a *Hemiplecta*. Gude's view appears to be the more correct, though, from consideration of examples in the British Museum, it would seem as though *javanica* is not a true *Hemiplecta*, but more probably a form intermediate between the latter and *Xesta*.

Shell perforate, subconoid, thin ; whorls 6, periphery rounded. The closely-set lines of growth decussated by spiral striæ that are sometimes closely gathered and undulating, sometimes scattered and irregular. Aperture without any angulation, rounded, somewhat effuse. Colour white or yellow, the body-whorl traversed by two bright chestnut bands, one at the periphery, the other above it, the latter continued onto the upper whorls. The columella reflected as a short, rather broad-based callus.

Dimensions : 36 mm. (max. diam.) × 22 mm. (max. alt.).

Holotype in the Zoological Department, British Museum, from Ambongo.

23. *Bathia madagascariensis, n. gen., n. sp. (Plate 35. figs. 11–13.)

It is only after considerable hesitation that the author has decided to assign a generic position to the single representative specimen.

It is clearly unlike any species described hitherto either from Madagascar or the adjacent regions, Ethiopian or Oriental. At first sight the author was inclined to consider it a *Taphrospira*, as its generic affinities clearly lie in that direction; but inasmuch as conchological evidence is alone available, it has seemed better to give it generic rank rather than associate it with a genus of which a clearly-defined conception founded upon anatomy has been formed, and to which its resemblances are at the best only general.

### Bathia, n. gen.

Shell in general form resembling that of *Taphrospira*, but with the apical whorls flattened down to the level of the body-whorl, yielding a perfectly horizontal apical region, and the body-whorl quadrate in outline; suture deeply channelled; minutely perforate.

Bathia madagascariensis, n. sp.

Shell thin, subpellucid, very pale yellow; whorls $6\frac{1}{4}$, those of the apex depressed and flattened to the level of the body-whorl, the suture deeply and widely channelled; sculptured with numerous extremely fine spiral striæ, intercepted by lines of growth. Aperture lunate, with a depression above corresponding to the channelled suture and forming an acute upper angle; columellar lip very slightly reflected over the umbilicus. When viewed in profile the body-whorl is seen to be very little rounded, horizontal below, and remarkably wide in comparison to its depth.

Genotype in the British Museum (Zoological Department).

From woods on limestone, Namoroku (Ambongo).

Dimensions: alt. 9·75 mm., diam. 19 mm.

A knowledge of the anatomy of the forms in question can only yield a satisfactory answer; but it may eventually be found that Férussac's *Helix prætumida* (Seychelles and Mauritius) and Morelet's *H. cyclaria* (Mauritius) fall into the group of this genus and *Taphrospira*.

### Fam. Vaginulidæ.

24. *Veronicella hovarum, n. sp.† (*v.* Appendix). (Plate 35. figs. 4, 5.)

*Locality* (see no. 1).

Body elongate, oblong, anterior and posterior ends equally rounded off, rather markedly arched, as much distended below the mantle-edge as above it; mantle-edge acute. Foot separated from body by a well-marked groove, plicate transversely and, in addition, subdivided by numerous thin ridges which are often themselves subdivided, and the edges of which are frequently frilled, posteriorly rounded, anteriorly squarely truncate, slightly tapering

† *Cf.* no. 18.

towards the extremity. Posterior tentacles dark grey, transversely wrinkled; anterior tentacles pale, slightly bifid at the extremity.

Colour (in alcohol) : the skin of the dorsal surface, which is covered with minute irregular papillæ and sparsely traversed by meandering seams, is dark bluish grey, becoming dull purplish yellow anteriorly. The median line is occupied by a thin yellow stripe, which falls 2 or 3 mm. short of the end of the body posteriorly and is lost anteriorly. The under surface is the same as the upper near the mantle-edge, but becomes paler near the foot, which is dull yellow.

Length (in alcohol) 33 mm.; breadth 14 mm.; width of sole 5 mm.

Type in the Zoological Department, British Museum.

Fam. Helicidæ.

25. *Helicophanta souverbiana, *Fischer*.

Fischer, Journ. de Conch. 1860, p. 210.

Woods, 300–600 m. alt., on gneiss rocks, Mangoro and Matitona (E.).

26. *Helicophanta bicingulata, *E. A. Smith*.

E. A. Smith, P. Z. S. 1882.

N. centre (plateau, about 1000 m. alt.).

27. *Helicophanta Methueni, n. sp. (Plate 35. figs. 14, 15.)

Liassic limestone, Ambongo (W.).

Erect, pyriform, imperforate; whorls nearly 5, the last very large. Aperture suboblique, rounded below. The columellar lip perpendicular and forming a flat triangular callus over, but not closing, the umbilicus. Peristome narrow, a little reflexed. The umbilical region markedly effuse. Growth-lines, as in *H. phenax*, decussated by spiral striæ, but even in rather worn examples not nearly so closely. Colour of the inferior half of the body-whorl ? pale yellow or ochreous, traversed by a brown band, the upper half and apical whorls of a yellowish brown, delimited from the inferior lighter area on the body-whorl by a second brown band.

Akin to *H. phenax*, Pilsbry, but distinguished clearly by the character of the columellar lip and umbilical region, the more acute apex, and probably by the texture.

Max. alt. 61 mm.

Holotype in the British Museum (Zoological Department), from Ambongo.

28. Eulota similaris, *Féruss.*

Férussac, Hist. nat. Moll. i. p. 171.

*Locality*. Cf. no. 1.

This species, as is now well known, has been distributed throughout the tropics in the soil adhering to coffee-plants.

29. *Ampelita sepulchralis, *Féruss.*

Férussac, Hist. nat. Moll. i. p. 51.

Anamalagotra and Tamatave-Marodasatia.

30. *Ampelita xystera, *Pfeiff.* (after Valenciennes, n. n.).

*Helix novacula*, v. Martens, Nov. Conch. 1879, vol. v. p. 181.
*H. lanx*, var., Férussac, Hist. nat. Moll. i. p. 357, pl. 62. figs. 8, 9, 10 (1850).
*H. xystera*, Pfeiffer, Symbolæ, 1841, p. 41 (after Valenciennes, n. n.).
? *Ampelita Shavi*, E. A. Smith. P. Z. S. 1882.

Tamatave-Marodasatia.

Woods, liassic limestone, Ambongo.

Woods, gneiss, Mangoro-Matitanavu, 300–600 m. alt.

I did not think such a synonymy were possible; but upon supplementing Mr. Methuen's material with shells from the British Museum and others kindly lent by Mr. J. H. Ponsonby, it became obvious that all the forms indicated grade into each other by imperceptible degrees.

Fam. Stenogyridæ.

31. *Clavator clavator (*Petit*).

*Bulimus clavator*, Petit, Revue Zool. 1844, p. 3.

Near R. Mangóky (S.E.). Woods, limestone soil.

32. *Clavator eximius (*Shuttleworth*).

*Spiraxis eximia*, Shuttleworth, Mittheil. Bern. naturf. Ges. 1852, p. 208.

Between Matitanu and Mangoro (E.); woods, 300–600 m.

As Pilsbry (Man. Conchology, ser. II. vol. xvii. p. 193) remarks, the relation of *Clavator* to other genera cannot be intelligently discussed until the soft parts are investigated. In addition, "the species resemble several diverse groups in other regions. *C. obtusatus* has a Stenogyroid contour, *C. Grandidieri* is Placostyloid, and *C. Balstoni, eximia*, &c. resemble *Thaumastus*" (Pilsbry, *loc. cit.*). Mr. T. Iredale, in addition, informs me that *C. eximia* has often been taken for *Placostylus Bollonsi* (New Zealand) at first sight. It is possible that this group is polyphyletic, and that anatomical knowledge will serve to discriminate the various elements.

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Appendix. [June 3rd, 1914.]

Since the foregoing account was drawn up some twelve months ago sundry delays have hindered its publication. The author therefore avails himself of the present opportunity to remedy in some small measure the deficiency of

information respecting the anatomy of the forms under discussion. The chief item of interest in these additions is the fact that dissection of the form diagnosed on conchological grounds and named *Hemiplecta oleata* by Ancey (no. 21) has resulted in the discovery that it is not referable to *Hemiplecta*, but appears to occupy a position near *Rhysota*.

Additions to the preceding account are given below, and figures have been incorporated in the text.

### Methvenia, n. gen.

Foot-sole undivided, a large vertically-directed caudal mucous pore. The penis and epiphallus are long and narrow; the vas deferens is also very long and bears an elongate cylindrical flagellum placed at a considerable distance from the epiphallus; vagina elongate. Jaw simple, with a median projection. Radula having the marginal teeth long, unicuspidate, almost straight, and furnished with a deeply excavated base. "Shell large, globose-depressed, thin, with the surface irregularly granulated above, and having the fine growth-lines decussated by sinuous spiral lines below" (*Ancey*).

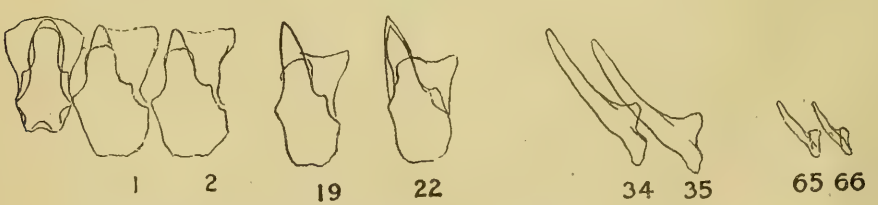
Methvenia oleata (*Ancey*) (*v.* no. 21, *antea*).

The *mantle*, on removing the shell, is found to be pale, with numerous dark brown and white flecks, and a number of elongated dark lines extending transversely across the mantle from the intestinal area.

The *foot* is *probably* chestnut-brown in colour. It exhibits a very narrow and partly evanescent peripodium, and a deep, vertically placed, caudal mucous pore which bears two lateral extensions which impart a cruciform shape to the pore. The latter character may be due to contraction in spirit. Burne (Proc. Malac. Soc. ix., 1910) has described a similar appearance of the mucous pore in *Rhysota Fouilloyi*. The foot-sole is undivided.

The precise interpretation of the *mantle-lobes* is uncertain as yet. There appear to be only a right cervical lobe, which encircles the pneumostome, and a subdivided left cervical lobe, a condition like that seen in *Rhysota* (*cf.* Burne, *loc. cit.*).

Fig. 1.




Radula of *Methvenia oleata* (Ancey). (Reichert, 4 oc. × 6 obj.)

The *jaw* (fig. 2) is simple, but remarkably thick. It bears a well-marked median projection.

The *radula* (fig. 1) exhibits a formula as follows :—

?50. ?20. 1. 20? 50? =141.

The transition between the lateral and marginal teeth is, as usual in these forms, difficult to determine, so that the relative numbers constituting each series must be left subject to query.

The distinctive feature of the radula is the series of long, acute, and almost straight marginals, which much resemble those figured for *Rhysota Fouilloyi* by Burne (*v. antea*). Such teeth are of course met with in other genera (e. g. *Ariophanta*), but never to the author's knowledge in combination with the precise median and laterals here figured.

Fig. 2

Fig. 3.

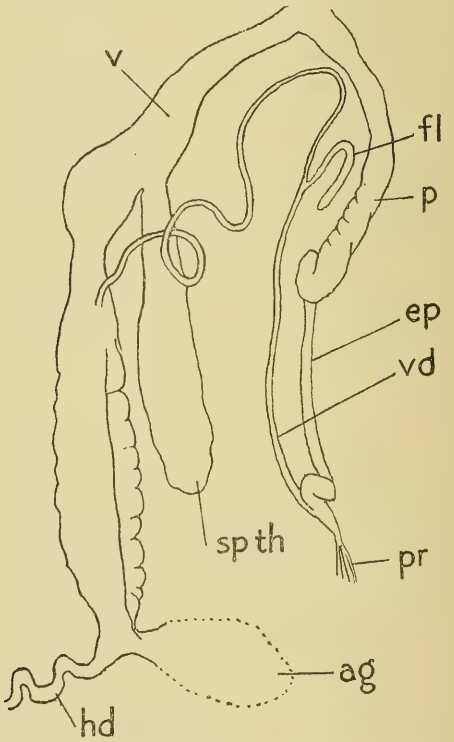



Fig. 2. Jaw of *Methvenia oleata* (Ancey). (Reichert, 2 oc. × 3 obj.)

Fig. 3. Genitalia of *Methvenia oleata* (Ancey). *p*, penis; *ep*, epiphallus; *pr*, penis retractor; *vd*, vas deferens; *fl*, flagellum; *v*, vagina; *spth*, spermatheca; *hd*, sperm-oviduct; *ag*, albumen-gland.

The *genitalia* (fig. 3) are characterized by the long narrow penis and epiphallus, and also by the cylindrical flagellum borne on the very long and winding vas deferens at a considerable distance from the epiphallus. In the female organs the distinctive feature is the length of the vagina.

The *kidney* is characteristic in being long and relatively very broad, and in having its distal extremity curved.

The association of characters above enumerated is not found in any other Zonitoid genus the author is familiar with, and the works of Godwin-Austen, Semper, &c. have been searched in vain. Clearly allied to *Rhysota*, and possibly *Ariophanta*, it nevertheless appears to be generically distinct.

Veronicella hovarum, n. sp. (*v. antea*, no. 24).

The *radula* (fig. 4) has the formula :—

? 17. ? 34. 1. ? 34. ? 17. = 105.

The teeth are closely crowded and the base of the central tooth is obscured by the internal angles of the first laterals. The rows of teeth are disposed in an undulating pattern, each half-row slanting forward from its central tooth until about the fortieth tooth, and then commencing a backward slant.

The *jaw* (*cf.* fig. 5) is remarkably wide. It exhibits four or five broad overlapping plates at each extremity, while the median plates are more narrow and fibrous.

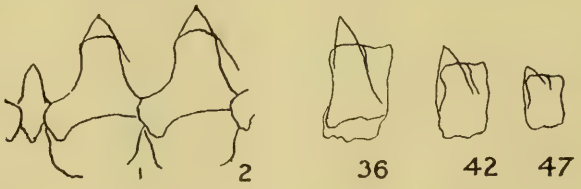



Fig. 4.

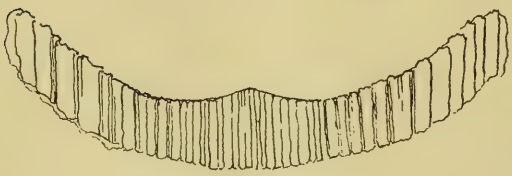


Fig. 5.

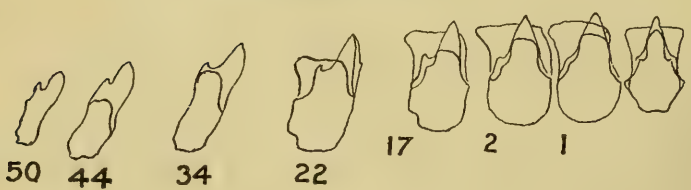



Fig. 6.

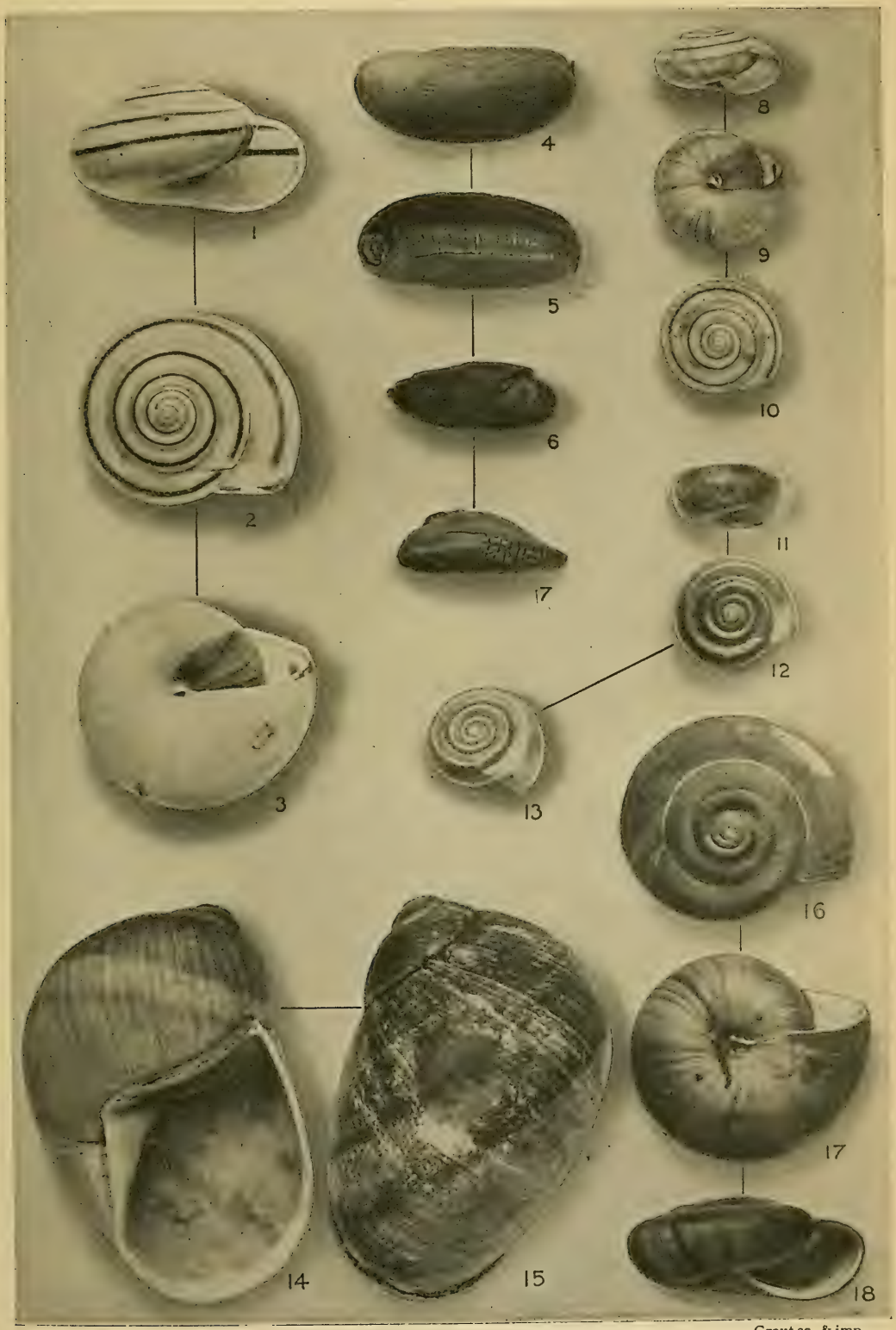
Fig. 4. *Veronicella hovarum.* Radula. (Reichert, 4 oc. × 6 obj.)
Fig. 5. *Veronicella hovarum.* Jaw. (Zeiss bin., 2 oc. × F. 55 obj.)
Fig. 6. *Urocyclus pinguis.* Radula. (Reichert, 4 oc. × 6 obj.)

Urocyclus pinguis, n. sp. (*v. antea*, no. 18).

The *radula* (fig. 6) has the formula :—

? 36. ? 17. 1. ? 17. ? 36. = 107.

The central tooth has a peculiar tendency towards asymmetry, the lateral cusps shown in the drawing being frequently disposed at different heights from the base.




Grout sc. & imp.

GASTROPODA FROM MADAGASCAR.

## EXPLANATION OF PLATE 35.

Figs. 1, 2, 3. *Hemiplecta bathensis*, n. sp.
Figs. 4, 5. *Veronicella hovarum*, n. sp.
Figs. 6, 7. *Urocyclus pinguis*, n. sp.
Figs. 8, 9, 10. *Kalidos bournei*, n. sp.
Figs. 11, 12, 13. *Bathia madagascariensis*, n. gen., n. sp.
Figs. 14, 15. *Helicophanta methueni*, n. sp.
Figs. 16, 17, 18. *Rhysota æquivoca*, n. sp.